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## (54) DEVICE AND METHOD FOR PICTURE PROCESSING

### (57)Abstract:

PROBLEM TO BE SOLVED: To provide a picture processor which can print a human face on a photograph by a suitable size in a suitable position.

SOLUTION: A picture on which a human face is photographed is inputted to a picture input device 1. A computer 2 edits the picture on a specified dialogue and displays the dialogue including the picture in a display device 5. Two positions A and B of the face are instructed to the picture on the dialogue by operating an instruction input device 6. The computer 2 obtains a rate of magnification/reduction and a position of the face on the basis of each of the positions A and B, magnifies and reduces the picture on the dialogue, trims this magnified and reduced picture so that the face of this magnified and reduced picture is arranged on a position in a screen of a certificate photograph and a picture of the certificate photograph for projecting the face is formed by this. A printer 3 prints the picture of the certificate photograph and ejects this printing form.

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## CLAIMS

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### [Claim(s)]

[Claim 1]An image processing device comprising:

A displaying means which displays a face.

A directing means which directs two predetermined places to said displayed face.

A control means which it asks for a rate of scaling of said face based on two places directed by said directing means and searches for a position of said face in a predetermined screen, carries out scaling of said face to said predetermined screen at said rate of scaling and is stored and printed out in said position.

[Claim 2]The image processing device according to claim 1 which can direct angle of rotation of said displayed faceand only said angle of rotation makes said control means rotate said face in said predetermined screen by said directing means.

[Claim 3]The image processing device according to claim 2 which faces directing angle of rotation of said displayed faceand displays a base line on a display screen of said displaying means by said directing means.

[Claim 4]An image processing method comprising:

A displaying step which displays a face.

A directions step which directs two predetermined places to said displayed face.

A control step which it asks for a rate of scaling of said face based on two places directed by said directions stepand searches for a position of said face in a predetermined screencarries out scaling of said face to said predetermined screen at said rate of scalingand is stored and printed out in said position.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the image processing device and image processing method which can print the picturized face in a proper size and position on a photograph.

[0002]

[Description of the Prior Art]It is required to print the picturized face in a proper size and position on a photograph when creating a certification photograph.

[0003]For this reasonin the stage of photographyafter storing the face of the person of a photographic subject in the finder of a camera at a proper size and positiona photograph was taken. In this caseif scaling of the picturized screen is carried out suitably and it prints on photographic paperthe face of the person of a photographic subject will be printed in a proper size and position on a photograph.

[0004]In the stage of a printtrimming of the picture of a film screen was carried out suitablyand the face of the person of a photographic subject was printed on a size and a position proper on a photograph.

[0005]

[Problem(s) to be Solved by the Invention]Howeveras mentioned abovein the stage of photographystore the face of the person of a photographic subject in the finder of a camera at a proper size and positionor in the stage of a print. It was not easy to carry out trimming of the picture of a film screen suitablyand it needed skilland when it was not an expertit went wrong in many cases.

[0006]Such a problem was similarly producedeven though it used any of the picture on a film and the digital image.

[0007]Even if it was the same person's facewhen printing this face on the different size and position on a photographagainphotography and trimming needed to be redonetherefore expense and time were spent.

[0008]Thenthe technical problem of this invention was made in view of the above-

mentioned conventional problem and there is in providing an image processing device and an image processing method with everyone able to print people's face in a proper size and position on a photograph simply.

[0009]

[Means for Solving the Problem] In order to solve the above-mentioned conventional technical problem, an image processing device of this invention is provided with the following.

A displaying means which displays a face.

A directing means which directs two predetermined places to said displayed face.

A control means which it asks for a rate of scaling of said face based on two places directed by said directing means and searches for a position of said face in a predetermined screen, carries out scaling of said face to said predetermined screen at said rate of scaling, and is stored and printed out in said position.

[0010] In one embodiment, by said directing means, an angle of rotation of said displayed face can be directed, and as for said control means, only said angle of rotation rotates said face in said predetermined screen.

[0011] According to one embodiment, by said directing means, it faces directing angle of rotation of said displayed face, and a base line is displayed on a display screen of said displaying means.

[0012] An image processing method of this invention is provided with the following.

A displaying step which displays a face.

A directions step which directs two predetermined places to said displayed face.

A control step which it asks for a rate of scaling of said face based on two places directed by said directions step and searches for a position of said face in a predetermined screen, carries out scaling of said face to said predetermined screen at said rate of scaling, and is stored and printed out in said position.

[0013]

[Embodiment of the Invention] Hereafter, the embodiment of this invention is described with reference to an accompanying drawing.

[0014] Drawing 1 is a block diagram showing one embodiment of the image processing device of this invention. The image processing device of this embodiment is provided with the picture input device 1, the computer 2, the printer 3, the picture preservation apparatus 4, the display 5, and the instruction input device 6.

[0015] The picture input device 1 reads the picture of a film or a photograph by CCD, for example, forms the digital image signal which shows this picture from the output of this CCD, and outputs this digital image signal to the computer 2. Or the picture input device 1 may read the image data currently recorded on recording media such as a magnetic disk and an optical disc, and may output a digital image signal.

[0016] After the computer 2 inputs the digital image signal from the picture input device 1, once memorizes it, performs processing later stated to this digital image signal, and displays a face on a size and a position proper on a predetermined screen, it outputs this screen to the printer 3, and the picture preservation apparatus 4.

[0017] The printer 3 is a well-known digital printer, transfers and develops the screen from the computer 2 to a print paper, and discharges the print paper which projected the face on

a size and a position proper on a predetermined screen.

[0018]As long as the picture preservation apparatus 4 is a well-known digital memory it may be what kind of thing.

[0019]The display 5 displays the picture shown by the above-mentioned digital image signal from the computer 2 i.e. the picture inputted through the picture input device 1 on the display screen of the display 5.

[0020]The instruction input device 6 is for operating various kinds of buttons displayed for example on the display screen of the display 5 or moving cursor and consists of various kinds of keys, mice etc.

[0021]In the image processing device of such composition processing which is described below is performed according to the flow chart of drawing 2 and people's face is printed in a proper size and position on a photograph by this.

[0022]First people's face inputs the copied picture into the picture input device 1 for example (Step 101). The digital image signal which shows this picture from the picture input device 1 to the computer 2 is transmitted by this. The computer 2 once memorizes this digital signal edits the picture shown by this digital image signal on a predetermined dialog (Step 102) and outputs a dialog including this picture to the display 5. Answering this the display 5 displays the dialog 11 as shown in drawing 3 on a display screen (Step 103).

[0023]In this dialog 11 the described image 12 is displayed on that right half and the rotation button 15, the directional arrow 18 and each angle-of-rotation button 19-1 to 19-5 are displayed. It lays on top of the described image 12 and the grid pattern 20 of the dotted line is displayed. This grid pattern 20 is a base line which shows the perpendicular direction and horizontal direction on a display screen and it is displayed in order to make inclination of a face easy to grasp so that it may state later.

[0024]In the left half of the dialog 11 the kind of print paper. Various class button 16-1, 16-2, 16-3 and color-print or monochrome print for specifying each number-of-sheets column 14-1, 14-2 for filling in the number of sheets of various class column 13-1, 13-2 for entering 13-3 and a print paper 14-3 and the kind of print paper. Each color monochrome button 17-1, 17-2 for specifying and 17-3 are displayed.

[0025]In this state it is first based on the grid pattern 20 on the display screen of the display 5. The rotation button 15 is operated through the instruction input device 6 for example seeing the angle of the face of the picture 12 of a display screen. If each angle-of-rotation button 19-1 to 19-5 is selectively operated through the instruction input device 6 and the hand of cut and angle of rotation of the picture 12 on the dialog 11 are directed by this. Answering this the computer 2 performs image processing only for this angle of rotation to make this hand of cut rotate the picture 12 on the dialog 11 (Step 104). Angle of rotation of the picture 12 on the dialog 11 is corrected by this.

[0026]Instead of operating the rotation button 15 and each angle-of-rotation button 19-1 to 19-5 by operating the mouse of the instruction input device 6, click one of four angles of the picture 12 of a display screen and on a display screen. This picture 12 may be rotated in the direction shown by the directional arrow 18 and angle of rotation of the picture 12 may be corrected to it.

[0027]Then either various class button 16-1, 16-2 or 16-3 are directed through the instruction input device 6. For example if the kind button 16-1 is directed this will be answered and the computer 2 will notify the size of the print paper directed with the kind

button 16-1 to the printer 3. Answering this the printer 3 chooses the size of the directed print paper (Step 105).

[0028] Next if the vertex position A of the head of a face and the tip position B of a jaw are directed to the picture 12 on the dialog 11 by operating the instruction input device 6 this will be answered and the computer 2 will recognize the two positions A and B in the picture 12 on the dialog 11 (Step 106).

[0029] what the instruction input device 6 is operated for -- the kind column 13-1 on the dialog 11 -- the kind (for example the object for driver's license documents.) of certification photograph The object for passport the object for personal histories etc. are filled in and (Step 107) the number of sheets of a certification photograph is entered in the number-of-sheets column 14-1 (Step 108) and a color or black and white is entered in color monochrome button 17-1 (Step 109). If two or more kinds of certification photographs are needed at this time (Step 110) NO entry to other various class column 13-2 13-3 each number-of-sheets column 14-2 14-3 and each color monochrome button 17-2 17-3 [ other ] will also be performed. Here the entry work of Steps 107 thru/or 109 may be a method which is chosen from two or more keys provided beforehand.

[0030] The computer 2 searches for the rate of scaling of the face of the picture 12 on the dialog 11 and the position of a face for every kind of certification photograph (Step 111). Namely after assuming the distance between each positions A and B of the face directed [ above-mentioned ] to be the length of this face When it asks for the rate of scaling of the picture 12 and the length of this face is further set to 5 so that the ratio of the length of this face to the length of the length of the screen of a certification photograph may be set to 5:8 The position of this face in the screen of this certification photograph is searched for so that the length (the length of overhead space) of the space above the position A in the screen of this certification photograph may be set to 1 and the length (length under a jaw) below the position B may be set to 2.

[0031] Each above-mentioned ratio may be changed if needed although it is fundamental.

[0032] In this way when the position of the face in the rate of scaling of the picture 12 and the screen of a certification photograph is searched for the computer 2 So that scaling of the picture 12 on the dialog 11 may be carried out at this rate of scaling and the face of this picture by which scaling was carried out may be arranged at this position in the screen of this certification photograph The picture of this certification photograph that projected the face in which carried out trimming of this picture by which scaling was carried out and scaling was carried out by this at this rate of scaling and which was positioned by this position is formed (Step 112). On the occasion of this trimming the portion of the picture overflowing from the screen of a certification photograph by which scaling was carried out is deleted. The computer 2 displays the frame 21 (shown in drawing 4) which shows the portion of the picture by which trimming is carried out on the picture 12 on the dialog 11 and specifies the portion of the picture by which trimming is carried out. When displaying this frame 21 the grid pattern 20 is eliminated from the display screen.

[0033] When classifying by color and displaying the grid pattern 20 and the frame 21 both may be displayed on a display screen.

[0034] By the result of the above operation the dialog 11 serves as a display style as shown for example in drawing 4.

[0035] Here the still more nearly following functions may be provided. That is since there

is no image data about that portion outside the limit when a certification photograph exceeds the original picture it keeps an output (print) from being possible about this certification photograph. in connection with this the entry to the column of the kind on the dialog 11 is also forbidden (for example it changes into a blank) -- it is made like.

[0036] Next the computer 2 is the color or black and white only the number of sheets directed to the print paper directed in Step 105 in Step 108 was instructed to be in Step 109 It directs to the printer 3 to print the picture of this certification photograph that projected the face which scaling was carried out and was positioned. Answering this only the number of sheets directed to the directed print paper prints the picture of this certification photograph and the printer 3 discharges this print paper (Step 113). The computer 2 memorizes the picture of this certification photograph to the picture preservation apparatus 4.

[0037] The above-mentioned step 111 112 113 is repeated according to the kind of certification photograph directed in Step 107. The certification photograph of several kinds is printed out by this.

[0038] Thus according to this embodiment if the picture by which people's face was copied is inputted inclination of this picture and 2 positions of this face are specified on a dialog and the kind of certification photograph is chosen the certification photograph in which this face has been arranged at a proper size and position can be obtained. And even if it chooses simultaneously two or more kinds of certification photograph this face is arranged for each kind of every certification photograph at a proper size and position.

[0039] This invention is not limited to the above-mentioned embodiment and can change variously. For example the ratio of the length of a face to the length of the length of the screen of a certification photograph the length of the space on the head in the screen of a certification photograph the length under a jaw etc. may be set up suitably and change of them may be enabled arbitrarily. You may enable it to specify arbitrary sizes as a size of a certification photograph. The critical range of the rate of scaling of a picture where people's face was copied may be set up.

[0040]

[Effect of the Invention] If the picture by which people's face was copied according to this invention is inputted inclination of this picture and 2 positions of this face are specified and the kind of certification photograph is chosen as explained above the certification photograph in which this face has been arranged at a proper size and position can be obtained. And even if it chooses simultaneously two or more kinds of certification photograph this face is arranged for each kind of every certification photograph at a proper size and position.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is a block diagram showing one embodiment of the image processing device of this invention.

[Drawing 2] It is a flow chart which shows the processing in the device of drawing 1.

[Drawing 3] It is a figure showing the dialog displayed on the display screen of the display in the device of drawing 1.

[Drawing 4] It is a figure showing the entry example of the dialog displayed on the display screen of the display in the device of drawing 1.

[Description of Notations]

- 1 Picture input device
  - 2 Computer
  - 3 Printer
  - 4 Picture preservation apparatus
  - 5 Display
  - 6 Instruction input device
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